

Abstract

Photoresist compositions, or photoacids, are used in etching circuit pathways on the surface of microelectronic components. Iodonium compounds generate a strong acid under short wavelength irradiation, which is capable of etching the polymeric surface coating of a silicon wafer. The strong acid is the conjugate acid of the counteranion. Larger counterions generate acids that diffuse to a lesser extent in the polymer resist matrix, producing better image resolution. Given the particular anion, the solubility of its diaryl iodonium salts will depend upon which aromatic rings are used on the iodonium molecule. A zwitterionic structure of the iodonium molecule, having both positive and negative charges on the same molecular species, can be used as photoacid composition in the photoresist step of microchip manufacturing.